

Example G: Gene Therapy

Specification: The specification discloses that viruses are commonly used as vectors to introduce genes into cells by first inserting the gene of interest into the DNA of the virus and then contacting the virus with the cells. The virus then infects the cells through cell binding receptors on the surface of the virus which bind to the cells and cause the virus to be internalized by the cells. Once internalized, the virus inserts its DNA, including the gene of interest, into the genome of the cell in such a manner that the gene of interest is expressed so as to produce its corresponding protein. Applicant has discovered that if viral vectors are first contacted with the recently discovered protein algernin, the algernin complexes with the cell binding receptors on the surface of the virus, changes the conformation thereof, and increases the infectivity of the viral vector by a factor of ten. Thus, the invention relates to a complex between a viral vector and algernin and is applicable to all situations where it is desirable to introduce genes into mammalian cells with a viral vector with a higher than normal rate of infectivity. Specifically, the specification discloses that the modified viral vector can be used *in vitro* for providing desired biological action in the cells, e.g., to produce useful proteins, and, when combined with a pharmaceutically acceptable carrier in a pharmaceutical composition, *in vivo* for medicinal purposes, such as gene therapy.

The specification lists several examples of viral vectors which are candidates for use within the claimed invention. The specification also provides the amino acid sequence of algernin as well as various methods of obtaining algernin suitable for use in the invention.

The specification includes several *in vitro* working examples with representative samples of viral vectors, genes of interest, and cells demonstrating that when the viral vectors are complexed with algernin, the complex shows a higher rate of infectivity. The examples further demonstrate that the gene of interest in the infected cells is then expressed so as to produce its corresponding protein. The specification does not show any examples relating to gene therapy or any *in vivo* use of the viral vectors.

Claims:

1. A viral vector comprising:
a virus comprising a cell binding receptor on the surface thereof